CLAIMS

1. Method for making a cellular structure (1) comprising a plurality of elements (2), which method comprises the following steps:

a) providing a first plurality of uniform elements (2), which form a first row (3) of elements;

b) providing a second plurality of uniform elements (2), which also have the same shape as the elements (2) in the first plurality and which form a second row (4) of elements (2), the second row (4) containing as many elements (2) as the first row (3) and being parallel to the first row (3) but displaced by a certain distance in its longitudinal direction in relation to the first row (3), which distance is less than the extension of one of the uniform elements (2) in the longitudinal direction of the two rows (3, 4);

c) applying an adhesive to the elements (2) in at least one of the two rows (3, 4);

d) bringing at least one of the two rows (3, 4) closer to the other so that the two rows (3, 4) are brought together and thereby bonded to one another by the adhesive.

2. Method for making a cellular structure (1) comprising a plurality of elements (2), which method comprises the following steps:

a) providing a first plurality of elements (2), which form a first row (3) of elements (2);

b) providing a second plurality of elements (2), which form a second row (4) of elements (2), which second row (4) is parallel to the first row (3);

c) applying an adhesive to the elements (2) in at least one of the two rows (3, 4);

d) bringing at least one of the two rows (3, 4) closer to the other so that the two rows (3, 4) are brought together and thereby bonded to one another by the adhesive so that the two rows thereby form a composite cellular structure (1), which cellular structure is then located in a first position;

e) providing a third plurality of elements (2) which form a third row (5) of elements, which third row (5) of elements is parallel to the rows (3, 4) in the composite cellular structure (1);

f) moving the cellular structure (1) a certain distance in the longitudinal direction of the first (3) and the second row (4) of elements (2), so that the cellular structure (1) is moved from the first position to a second position;

g) applying an adhesive to the elements in at least one of the second row and third row (5), the adhesive being applied either before, after or at the same time as the cellular structure (1) is moved to the second position;

b) bringing the third row (5) and the cellular structure (1) together with one another so that they are thereby bonded to one another by the adhesive, due to which the third row (5) becomes part of the cellular structure (1).

3. Method for making a cellular structure (1) comprising a plurality of elements (2), which method comprises the following steps:

a) providing a first plurality of elements (2), which forms a first row (3) of elements;

b) providing a second plurality of elements (2), which forms a second row (4) of elements (2);

c) applying an adhesive to the elements (2) in at least one of the two rows (3, 4);

d) bringing the elements in at least one of the two rows (3, 4) closer to the other so that the two rows (3, 4) are brought together and thereby bonded to one another by the adhesive to form a cellular structure (1) thereby.

4. Method according to claim 3, characterized in that the second plurality of elements (2) is provided in that elements (2) intended to form the second plurality of elements are fed in a direction parallel to the first row (3) of elements until a predetermined number of elements (2), which form a second row (4) parallel to the first, are located in a predetermined position, so that the second row (4) is complete and the bringing of the elements in at least one of the two rows (3, 4) closer to the other taking place after the second row (4) has reached its predetermined position..

5. Method according to claim 3, characterized in that the second plurality of elements (2) is provided in that elements intended to form the second plurality of elements are fed from two opposite directions, which opposite directions are both parallel to the first row of elements, the elements (2) being transported until the elements (2) that are fed in one direction meet elements (2) that have been transported in the opposite direction and together with the elements (2) transported from the other direction form a second row (4) of elements (2), and the bringing of at least one of the two rows (3, 4) closer to the other taking place after the second row (4) has been formed.

6. Method according to claim 5, characterized in that the feed from each direction is interrupted after a predetermined number of elements (2) has been transported.

7. Method according to claim 4, characterized in that the feed is interrupted after a predetermined number of elements (2) has been transported.

8. Method according to claim 4, characterized in that all elements (2) are have the same shape and that they have a circular-cylindrical shape.

9. Method for making a cellular structure comprising a plurality of circular-cylindrical elements (2), which method comprises the following steps:

a) providing a first plurality of uniform circular-cylindrical elements (2), which form a first row (3) of elements (2);

b) providing a second plurality of elements (2), which have the same shape as the elements (2) in the first plurality and which form a second row (4) of elements (2), which second row (4) is parallel to the first row (3) but displaced in phase in relation to the first row (3);

c) applying an adhesive to the elements (2) in at least one of the two rows (3, 4);

d) bringing the elements (2) in at least one of the two rows (3, 4) closer to the other so that the two rows (3, 4) are brought together and thereby bonded to one another by the adhesive to thereby form a composite cellular structure (1).

10. Method according to claim 9, characterized in that a third plurality of elements (2) is provided, the elements (2) in the third plurality of elements (2) having the same shape as the elements (2) in the first and the second plurality and forming a third row (5) of elements, which third row of elements (2) is parallel to the rows (3, 4) in the composite cellular structure (1), that the composite cellular structure (1) is moved a certain distance in the longitudinal direction of the first and second rows (3, 4) of elements from a first position of the composite cellular structure (1) to a second position, that an adhesive is applied to the elements in at least one of the second row (4) and the third row (5), the adhesive being applied either before, after or at the same time as the cellular structure (1) is moved to the second position and in that the third row (5) and the cellular structure (1) following movement of the cellular structure (1) and application of the adhesive are brought together with one another so they are thereby bonded to one another by the adhesive, due to which the third row (5) becomes a part of the composite cellular structure (1).

11. Method according to claim 9, characterized in that the second plurality of elements (2) is provided in that elements (2) intended to form the second plurality of elements are fed from two opposing directions, which opposing directions are both parallel to the first row (3) of elements, the elements (2) being transported until the elements (2) that are fed in one direction meet elements (2) that have been transported in the opposing direction and together with the elements (2) that have been transported from the other direction form a second row (4) of elements, and the bringing of at least one of the two rows (3, 4) closer to the other taking place after the second row (4) has been formed.

12. Method according to claim 11, characterized in that the feed from each direction is interrupted after a predetermined number of elements (2) has been transported and that the second row (4) and the first row (3) are brought together with one another after the feed has been interrupted.

13. Method according to claim 12, characterized in that the bringing together of the elements (2) in the first and the second row (3, 4) of elements (2) takes place in that the elements in the second row (4) are conveyed simultaneously towards the first row (3) so that the whole of the second row (4) is conveyed towards the first row (3) as a coherent unit.

14. Method according to claim 13, characterized in that, during feeding of the circular-cylindrical elements (2), the elements are allowed in both feed directions to pass a detector (6) linked to a control unit (7) and it is recognized in this way how many circular-cylindrical elements (2) pass the detector (6) and that after a predetermined number of elements (2) has passed, the logic unit (7) emits a signal that the feed is to be interrupted.

15. Method according to claim 9, characterized in that adhesive is applied to the elements (2) in a row in that a carriage (15) provided with at least one sensor (16) and a nozzle (13) connected to a source (14) of adhesive is guided along the row at a predetermined speed, the sensor (16) being placed at a distance from the nozzle (13) and detecting the presence or absence of an element and emitting a signal to a logic unit (7) when the presence of an element (2) is detected, and the logic unit (7), starting out from the known speed and the distance between the nozzle (13) and the sensor (16) of the

carriage (15), calculates the time that remains until the nozzle (13) is located in a certain position in relation to an element detected by the sensor (16) and sends a pulse to activate the nozzle (13) when the time calculated has elapsed.

16. Machine for making a cellular structure (1) comprising a plurality of elements, which machine comprises:
    a) a guide (8) with straight inner walls (9) that form a channel (10) in which a plurality of uniform elements (2) can be transported;
    b) drives (11) disposed to act on elements placed in the channel (10) to convey these in a first direction, so that a coherent row of elements can be conveyed forwards in the channel (10);
    c) a carrier (12) arranged in connection with the channel (10), which carrier (12) has an extension that is principally parallel to the first direction and which carrier (12) is also movable in a second direction principally perpendicular to the first direction, so that the carrier (12) can move in the second direction and thereby take with it a coherent row of elements that have been transported in the channel (10), so that the row is carried forward to an end position for the movement of the carrier (12) in the second direction;
    d) at least one nozzle (13) connected to a source (14) of adhesive and disposed to be movable in a direction parallel to the first direction, which nozzle (13) is either disposed to apply adhesive to a row of elements (2) that has just been conveyed to the end position or to apply adhesive to a row of elements before these have begun to be conveyed towards the end position of the carrier (12).

17. Machine for making a cellular structure (1) comprising a plurality of elements (2), which machine comprises:
    a) a guide (8) with inner walls (9) that form a channel (10) in which a plurality of uniform elements can be transported;
    b) a drive (11) disposed to act on elements placed in the channel (10) to convey these forwards in the channel (10);
    c) at least one sensor (6) connected to the channel (10) and disposed to detect the elements transported in the channel and which sensor (6) is coupled to the drive (11) to interrupt the transportation of elements when a predetermined number of elements has passed the sensor (6);

d) a carrier (12) arranged in connection with the channel (10), which carrier (12) is movable, so that the carrier (12) can take with it elements that have been transported in the channel (10), so that elements (2) transported in the channel (10) can be conveyed to an end position for the movement of the carrier (12);

e) at least one nozzle (13) connected to a source (14) of adhesive and disposed to be movable so that the nozzle (13) can move along a coherent group of elements and apply adhesive to these.

18. Machine according to claim 17, characterized in that the guide (8) is a straight guide in which a coherent row of elements can be transported in a first direction by the drive (11) and that the carrier (12) has an extension that is principally parallel to the first direction and that the carrier (12) is movable in a second direction that is principally perpendicular to the first direction, so that the carrier (12) can move in the second direction and thereby take with it a coherent row of elements that have been transported in the channel (10) so that the row is conveyed forwards to an end position for the movement of the carrier (12) in the second direction.

19. Machine according to claim 18, characterized in that the machine comprises a table (17) for receiving a coherent row of elements, which table (17) has a flat working surface on which received elements (2) can slide and the carrier (12) being arranged such in relation to the table (17) that the movement of the carrier (12) forwards to the end position for its movement in the second direction can convey elements from the channel (10) to the table (17) for delivery onto the working surface of the table (17).

20. Machine according to claim 19, characterized in that the table (17) is movable in a direction perpendicular to the direction of movement of the carrier (12) and parallel to the first direction.

21. Machine according to claim 20, characterized in that a plate or beam (18) is arranged in connection with the table (17), which plate or beam (18) is movable in a direction to and from the working surface of the table (17).

22. Machine according to claim 19, characterized in that the machine has a stand (19) on which a carriage (15) is arranged movably in connection with the working surface of

the table (17) and on which carriage (15) the nozzle (13) is arranged so that the nozzle (13) can be guided along a row of elements standing on the working surface of the table (17) and the carriage (15) being provided with at least one sensor (16) that can detect the presence of an element placed on the table (17) and which sensor (16) is placed at a distance from the nozzle (13) in the direction of movement of the carriage (15).

23. Machine according to claim 22, characterized in that the carriage (15) can be driven at a predetermined speed and that the machine also comprises a logic unit (7) that knows the predetermined speed and the distance between the sensor (16) and the nozzle (13) of the carriage (15) and the logic unit (7) also being connected to the sensor (16) of the carriage (15), so that during movement of the carriage (15) the logic unit (7) can calculate the time that remains before the nozzle (13) is located in a certain position in relation to an element (2) detected by the sensor (16).

24. Machine according to claim 17, characterized in that the channel (10) is disposed to be fed from two different directions.

25. Machine according to claim 24, characterized in that the guide (8) is a straight guide that comprises two fixed parts (20) and a movable part (21), which movable part (21) of the guide (8) is disposed to be able to move in the vertical direction together with the carrier (12) from a first position, in which the movable guide part (8) is located in a plane separate from the working surface of the table (17), to a second position in which at least a part of the movable guide part (8) is located on a level with the working surface of the table (17).

26. Machine according to claim 25, characterized in that the movable guide part (21) comprises a support (22) on which elements for the cellular structure can be placed and which support (22) forms a floor in the channel (10) and the support (22) being adjustable in the vertical direction so that elements of different height can be placed in the correct position in relation to the carrier (12).